

STRATIGRAPHY OF THE STEAMBOAT SPRINGS AREA, COLORADO

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The sediments described belong to the Permo-Pennsylvanian, Triassic, Jurassic and Cretaceous systems. These sediments total 6740 feet including an estimated thickness of 5000 feet for the Mancos shale. In the vicinity of Steamboat Springs the Cretaceous formations are well exposed but the older formations are poorly exposed. For this reason, much of the information on the pre-Dakota section is derived from the Texas Company's deep test at Tow Creek twelve miles west of Steamboat Springs. The best surface section available is that on the east slope of Emerald Mountain about one mile south of Steamboat Springs where Permo-Pennsylvanian sediments may not be present.

PERMO-PENNSYLVANIAN

The pre-Cambrian granites, gneisses and schists of the Park Range near Steamboat Springs are overlain by about 300 feet of redbeds belonging to the Maroon formation of Pennsylvanian age. This formation is typically arkosic and is similar to the Fountain formation of the east flank of the Front Range. Steamboat Springs is near the northeastern wedge edge of the Maroon formation.

TRIASSIC

The Triassic interval found at the Tow Creek oil field is represented by the Moenkopi, Shinarump and Chinle formations.

The Moenkopi is logged as 463 feet thick. It is made up of dull red sandy shale, sandstone, siltstone and some greenish gray and yellow shales. The Moenkopi is usually non-calcareous. Stringers of gypsum occur in the lower part of the formation.

The Shinarump is logged as 73 feet thick. This is somewhat thicker than normal for this region. The formation is typically conglomeratic, composed chiefly of varicolored quartz grains ranging from medium sand to pebbles one-half inch or more in diameter.

The Chinle is logged at 234 feet in thickness. This formation consists of shale, mudstone and fine-grained sandstone which may be calcareous. The dominant color of the rock is red with minor amounts of brown, yellow, gray and purple.

Total Triassic found at Tow Creek measures 770 feet.

JURASSIC

The Jurassic section at Tow Creek including the Entrada sandstone and Morrison formation is about 520

feet thick. It is locally unconformable with the underlying Chinle.

The Entrada consists of massive beds of fine-grained, sugary, light gray sandstone which usually crops out in high sheer cliffs.

The Morrison formation is about 300 feet thick at Tow Creek and elsewhere. The formation consists predominately of variegated green, greenish-gray and maroon shale. Some thin beds of limestone, lenses of chert and white sandstone are sometimes found near the base.

CRETACEOUS

The Cretaceous system at Steamboat Springs is represented by the Dakota sandstone and Mancos shale.

The Dakota sandstone is about 150 feet thick; it consists of massive non-calcareous fine-grained sandstone containing lenses of coarse sand and conglomerate. The sandstone is usually hard and often quartzitic with siliceous cement. The conglomerates are usually confined to the basal part of the formation. Carbonaceous material is often disseminated through the sand.

The Mancos shale in the Steamboat Springs area is here defined as including all sediments from the top of the Dakota to the base of the Tow Creek sandstone which is taken as the basal bed of the Mesaverde group. So defined, the formation is about 5000 feet thick.

The lower five hundred feet is mainly thin-bedded black carbonaceous shale which correlates with the Benton of the eastern slope. Immediately above the Dakota is a slightly siliceous zone containing fish scales which is assumed to be equivalent to the Mowry.

At the top of the Benton zone is a fossiliferous sandy limestone which correlates with the Frontier formation of Wyoming and with the Codell member of the Carlile formation of the eastern slope. Above the Frontier is a calcareous zone 800 to 900 feet thick which correlates with the Niobrara. This zone is characterized by hard, brittle, thin-bedded limy shales which weather white on outcrop.

The Mancos sediments above the calcareous zone are characterized by sandy gray shales. Toward the top the formation becomes more sandy with three or more well-defined sandstone beds. The more prominent sandstones occur at about 300, 600, and 1200 feet below the base of the Tow Creek sandstone. The lowest of these may be the Morapos sandstone.

Traveling west toward Craig, the Mesaverde group is encountered near Milner; the Lewis shale just beyond Mt. Harris; and the Lance formation west of Hayden.

SYSTEM	FORMATION		FEET THICKNESS	
CRETACEOUS	Mancos Shale	Morapos ?	5000	
		Niobrara		
		Frontier		
		Mowry		
		Dakota		150
		JURASSIC		Morrison
	Entrada	200		
TRIASSIC	Chinle	230		
	Shinarump	70		
	Moenkopi	470		
PERMO-PENN	Maroon	300		

COLUMNAR SECTION OF ROCKS
VICINITY OF STEAMBOAT SPRINGS